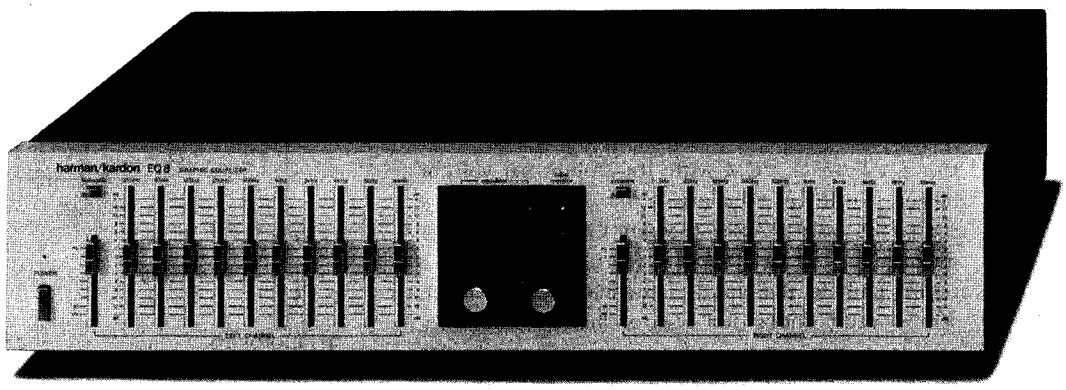
The Harman Kardon Model EQ8

Manual No. 61A

GRAPHIC EQUALIZER

Technical Manual



SPECIFICATIONS

	Nominal	Limit
Input Sensitivity at 1V Output	1.1V ± 1dB	
Input Impedance	35kΩ	≧ 30kΩ
Signal-to-Noise Ratio (IHF-A)	115dB	≧ 112dB
Crosstalk at 10kHz	68dB	≧ 65dB
Overload (20 ~ 20kHz)	5.0V	≧ 4.5V
Overload Indicator	4.4V	≧ 4.2V
Frequency Response at 0dB	0.25Hz ~ 180kHz	
THD at 2V Output (20 ~ 20kHz)	0.005%	≦ 0.01%
Center Frequency	31.5, 63, 125, 250, 500, 1k, 2k, 4k, 8k, 16kHz	
Equalizer Control Action	±12.5dB ± 1.0dB	
Input Level Control	−20dB ± 1.0dB	
Subsonic Filter 5Hz	3.5dB ± 1dB	
30Hz	3.5dB ± 1dB	
Square Wave Tilt (20Hz)	3.5%	≦ 5%
Square Wave Response (1kHz)	0.14V	≦ 0.25V

Dimensions (W x H x D)	17-7/16" x 4" x 13-7/16" (443 x 102 x 341mm)
Weight	9lbs. 15oz. (4.5kg)
Power Supplies	
U.S. & Canadian models	AC 120V, 60Hz
General model	AC 100/120/220/240V, 50/60Hz
Power Consumption	8W

This specification is the target of servicing. But, there is a case that the specification is not applicable to the measurement condition and instrument.

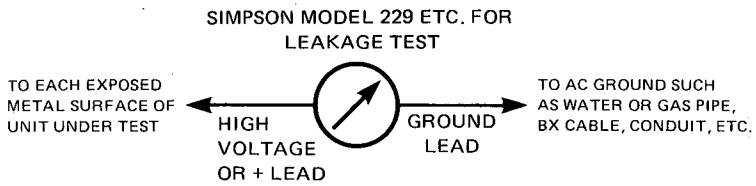
Specifications and components subject to change without notice. Overall performance will be maintained or improved.

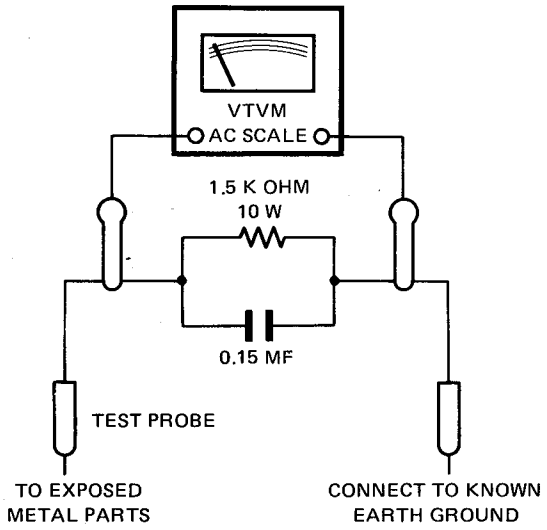
harman/kardon
240 CROSSWAYS PARK WEST, WOODBURY, N.Y. 11797
1112-H15261A8 P-08834 1650 PRINTED IN JAPAN

LEAKAGE TEST (FOR SERVICE ENGINEERS IN THE U.S.A.)

Before returning the unit to the user, perform the following safety checks:

1. Inspect all lead dress to make certain that leads are not pinched or that hardware is not lodged between the chassis and other metal parts in the unit.
2. Replace all protective devices such as nonmetallic control knobs, insulating fishpapers, cabinet backs, adjustment and compartment covers or shields, isolation resistor-capacity networks, mechanical insulators, etc.
3. Be sure that no shock hazard exists; check for leakage current using Simpson Model 229 Leakage Tester, standard equipment item No. 21641, RCA Model WT540A or use alternate method as follows:
   Plug the AC line cord directly into a 120-volt AC receptacle (do not use an Isolation Transformer for this test). Using two clip leads, connect a 1500 ohm, 10-watt resistor paralleled by a 0.15mf capacitor, in series with all exposed metal cabinet parts and a known earth ground, such as a water pipe or conduit. Use a VTVM or VOM with 1000 ohms per volt, or higher, sensitivity to measure the AC voltage drop across the resistor. (See Diagram.) Move the resistor connection to each exposed metal part having a return path to the chassis (antenna, metal, cabinet, screw heads, knobs and control shafts, escutcheon, etc.) and measure the AC voltage drop across the resistor. (This test should be performed with the power switch in both the On and Off positions.)
   A reading of 0.35 volt RMS or more is excessive and indicates a potential shock hazard which must be corrected before returning the unit to the owner.





DISASSEMBLY PROCEDURES

1 CABINET TOP REMOVAL

Remove 6 screws Ⓐ and then remove the cabinet top.

2 FRONT PANEL ASSEMBLY REMOVAL

1. Remove the cabinet top (refer to step 1).
2. Pull out the equalizer level and subsonic frequency control knobs (133).
3. Remove 6 screws Ⓑ and then remove the front panel assembly.

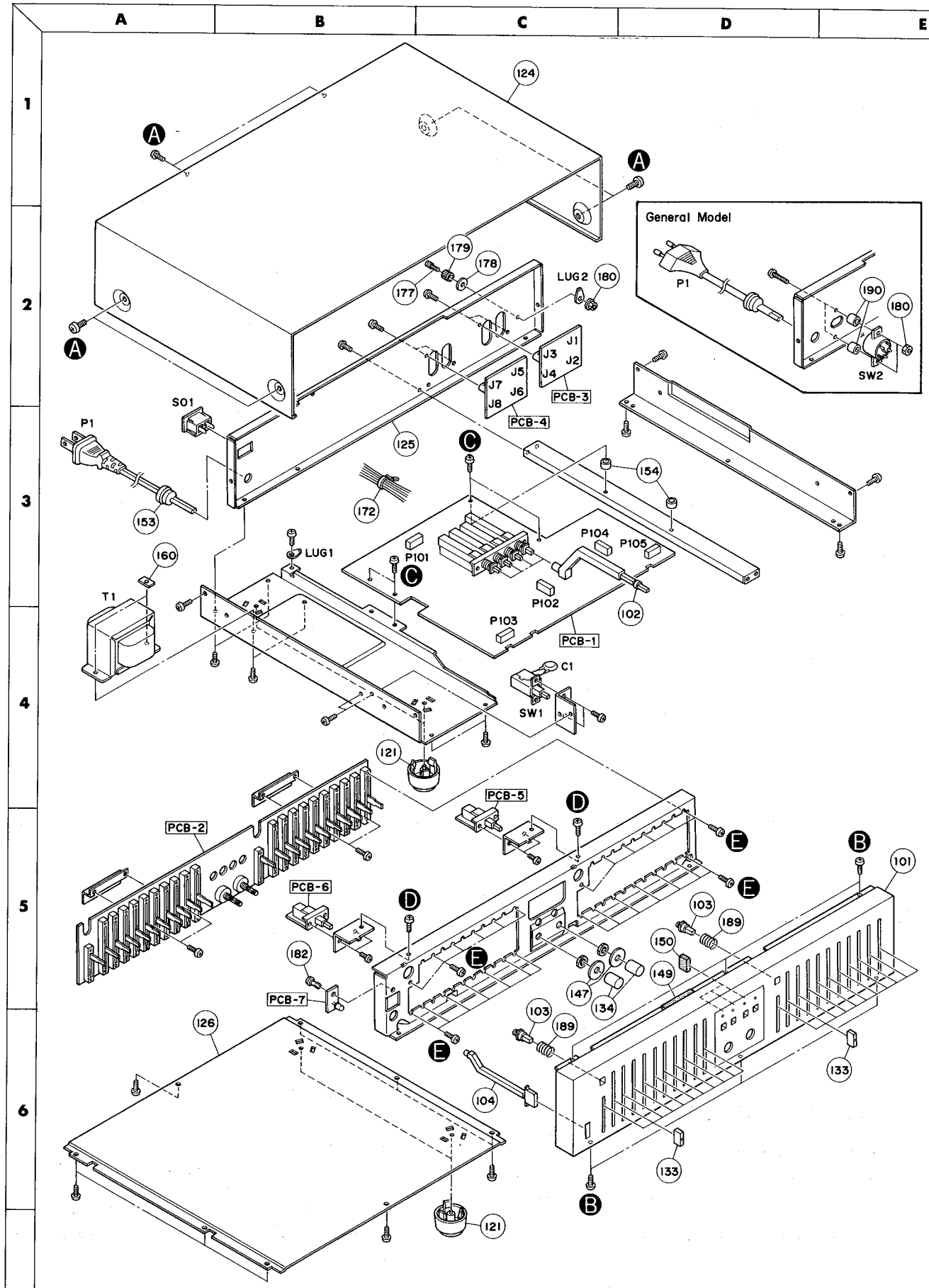
3 MAIN P.C. BOARD (PCB-1) REMOVAL

1. Remove the cabinet top and front panel assembly (refer to steps 1 and 2).
2. Open the lid of connectors (P101, 102, 103, 104, 105) on the main P.C. board (PCB-1) and then disconnect lead wires.
3. Remove 4 screws Ⓒ and then remove the main P.C. board (PCB-1) with push button assemblies (102). If necessary, unsolder the lead wires.

4 CONTROL P.C. BOARD (PCB-2) REMOVAL

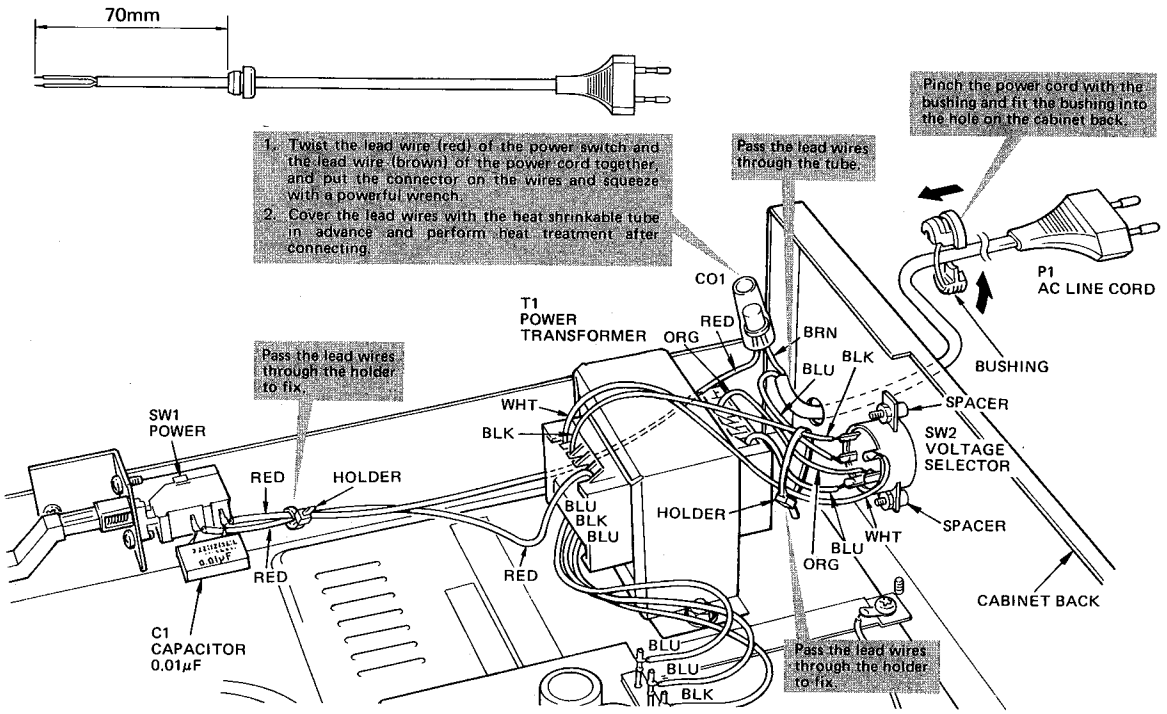
1. Remove the cabinet top, front panel assembly and main P.C. board (refer to steps 1 through 3)
2. Remove 2 screws Ⓓ and then remove the subsonic switch P.C. boards (PCB-5 & PCB-6).
3. Pull off the Input Level knobs and remove input level control mounting nuts.
4. Remove 28 screws Ⓔ and then remove the control P.C. board (PCB-2).

GENERAL UNIT EXPLODED VIEW

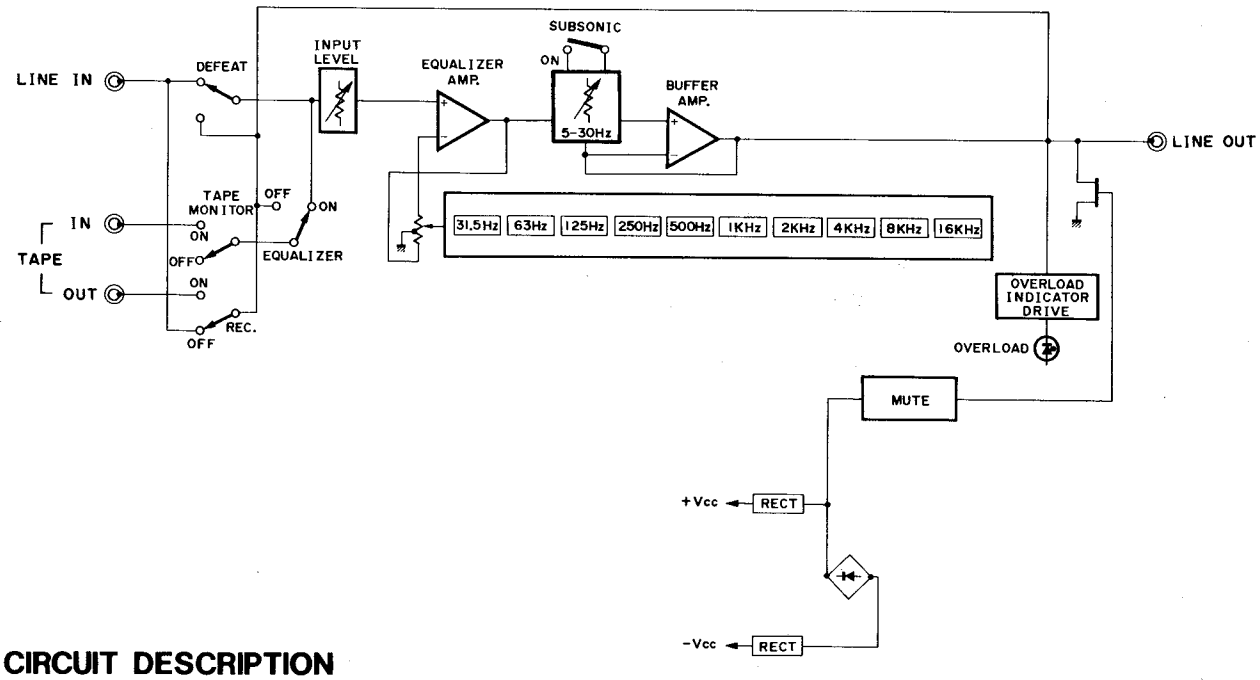


POWER CORD REPLACEMENT (FOR SERVICE ENGINEERS IN OTHER THAN NORTH AMERICA)

In order to prevent fire or shock hazard when replacing the power cord, follow the procedure below to replace the parts with the standard supply parts.



BLOCK DIAGRAM



CIRCUIT DESCRIPTION

• SIGNAL PATH (Lch)

Signal is fed to ⑤ pin of the equalizer amp. IC101-2/2 through input level volume. The equalizer amp. has to high pass filters in its feed back loop. ⑦ pin output of the equalizer amp. IC101-2/2 is fed to ③ pin of the buffer amp. IC101-1/2.

• MUTING

After the power switch is set to on, Q5 (2SC2603) stays off until C11 and C12 are charged up and the base of Q5 (2SC2603) becomes 0.7V. Q101 (2SK363) and Q102 (2SC363) becomes on and muting operation is completed.

Ref. No.	Part No.	Description

GENERAL UNIT PARTS LIST

101	A443-EQ8A	Front Panel Assembly
102	A662-EQ8A	Push Button Assembly, Equalizer Selector, Tape Monitor
103	A662-EQ8B	Push Button Assembly, Subsonic
104	A662-EQ8C	Push Button Assembly, Power
121	1319-0139	Foot
124	1414-04001	Cabinet Top
125	1424-09701	Cabinet Back (U.S. & Canadian models)
"	1424-11201	" (General model)
126	1424-09801	Cabinet Bottom
133	1642-03201VN	Knob, Equalizer Level & Subsonic Frequency Controls
134	1634-04301	Knob, Input Level
147	2111-13115	Felt
149	2112-11762	Sponge
150	2112-11231	Sponge
153	2114-415027	Bushing
154	2132-01406	Spacer
160	2219-7091	Bracket
172	2240-7120	Holder
177	2310-7015	Special Screw
178	2410-7005	Special Washer
179	2440-7011	Special Nut
180	2440-7016	Special Nut
182	2459-3004511	Rivet
189	2651-210187	Spring
190	2132-7116	Spacer
	2211-7233	Chassis, T1
	2211-7234	Chassis, Right
	2211-7244	Chassis, Front
	2219-7933	Bracket, PCB-5 & PCB-6
	2219-7934	Bracket, PCB-1 Mounting
	2219-7935	Bracket, PCB-2
	2219-7936	Bracket, SW1
	1111-J30149	Owner's Guide (U.S. model)
	1111-J30150	Owner's Guide (General & Canadian models)
	1111-J90195	Important Safeguards Guide (for U.S. model)
	1221-787144	Carton Box
	1222-7216	Cushion (2 Used)

ELECTRICAL PARTS LIST

CHASSIS MISCELLANEOUS

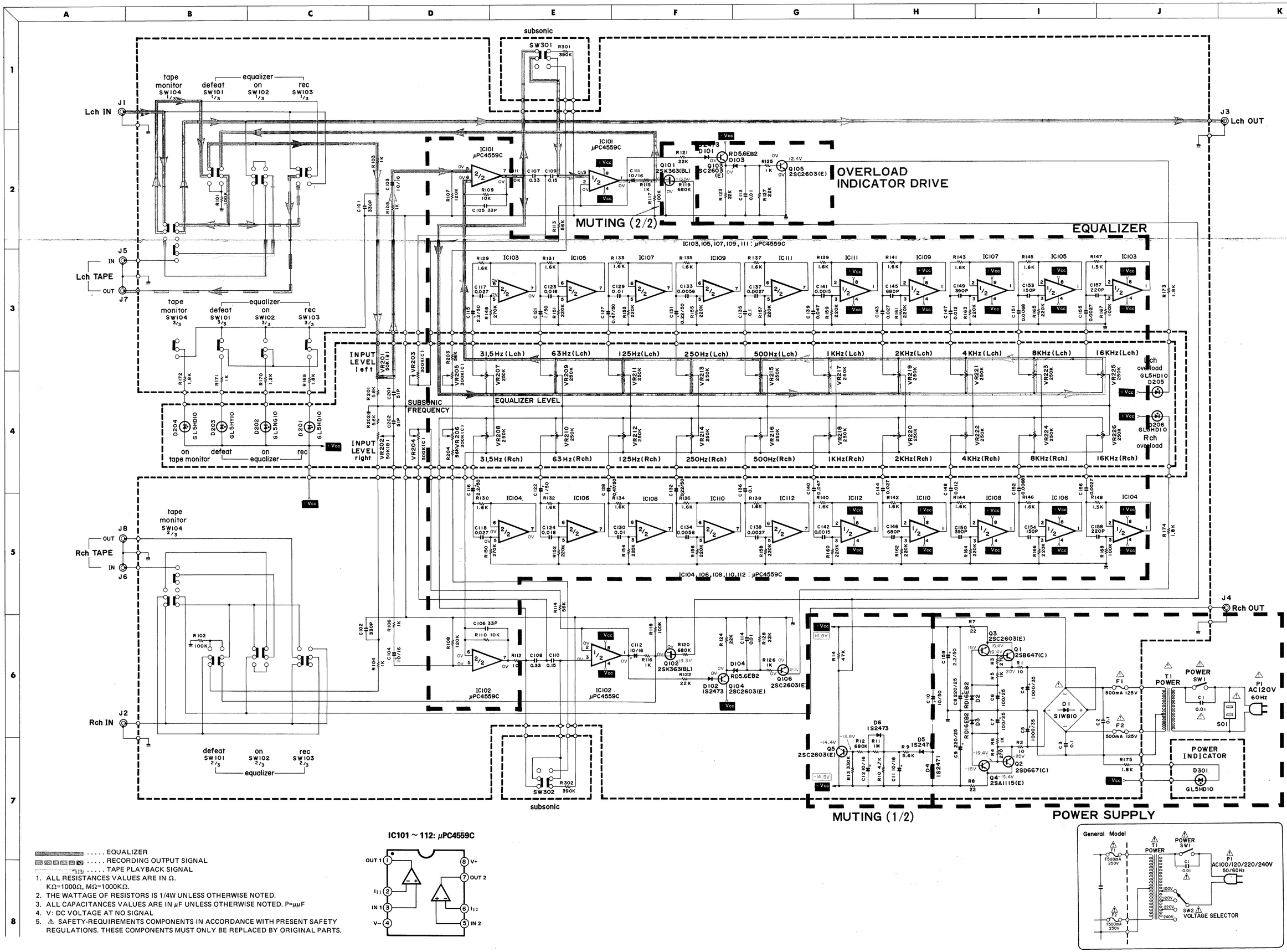
P1	4161-71147	Power Cord (U.S. & Canadian models)
"	4161-7256	Power Cord (General model)
T1	5584-701421	Power Transformer (U.S. & Canadian models)
"	5584-701422	Power Transformer (General model)
SW1	4431-A01056	Push Switch, Power
SW2	4411-104736	Rotary Switch, Voltage Selector (General model only)
SO1	4474-164	AC Outlet, Unswitched (U.S. & Canadian models only)
CO1	4443-712	Connector, Power Cord (General model only)
C1	5361-1030419	Capacitor, 0.01μF, +100%–0%, AC125V, Ceramic (U.S. & Canadian models)
"	5352-1030958	Capacitor, 0.01μF, ±20%, AC250V, Metalized Polyester (General model)
LUG1, 2	4211-4	Lug Terminal
	4474-29	AC Plug Adaptor (General model only)
	4161-7185	Connection Cord (Accessary)

PCB-1 MAIN P.C. BOARD

	RESISTORS	
R1, 2	5102-1004715	10Ω, ±2%, 1/4W, Fuse
R7, 8	5102-2204715	22Ω, ±2%, 1/4W, Fuse
	CAPACITORS	
C4, 5	5345-108E041	1000μF, ±20%, 35V, Electrolytic
C6, 7	5345-107-25	100μF, +50%–10%, 25V, Electrolytic
C8, 9	5345-227D041	220μF, ±20%, 25V, Electrolytic
C10	5345-106-50	10μF, +50%–10%, 50V, Electrolytic
C11, 12	5345-L106M16	10μF, ±20%, 16V, Electrolytic
C101, 102	5359-3315851	330pF, ±5%, 100V, Polypropylene
C103, 104, 111, 112	5345-L106M16	10μF, ±20%, 16V, Electrolytic
C105, 106	5353-330534	33pF, ±5%, 500V, Mica
C115, 116	5345-L225M50	2.2μF, ±20%, 50V, Electrolytic

Ref. No.	Part No.	Description
C121, 122	5345-L105M50	1μF, ±20%, 50V, Electrolytic
C127, 128	5345-L474M50	0.47μF, ±20%, 50V, Electrolytic
C131, 132	5345-L224M50	0.22μF, ±20%, 50V, Electrolytic
C145, 146	5359-6815851	680pF, ±5%, 100V, Polypropylene
C149, 150	5359-3915851	390pF, ±5%, 100V, Polypropylene
C153, 154	5359-1515851	150pF, ±5%, 100V, Polypropylene
C157, 158	5359-2215851	220pF, ±5%, 100V, Polypropylene
C159	5345-225-50	2.2μF, +75%—10%, 50V, Electrolytic
	INTEGRATED CIRCUITS	
IC101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112	5652-μPC4559C	μPC4559C
	TRANSISTORS	
Q1	5612-647(C)	2SB647(C)
Q2	5614-667(C)	2SD667(C)
Q3, 5, 103, 104, 105, 106	5613-2603(E)	2SC2603(E)
Q4	5611-1115(E)	2SA1115(E)
Q101, 102	5616-2SK363BL	F.E.T., 2SK363(BL)
	DIODES	
D1	5685-S1WB10	Bridge Silicon, S1WB10
D2, 3	5635-RD16EB2	Zener, RD16EB2
D4, 5	5636-1S2471	1S2471
D6, 101, 102	5631-1S2473	1S2473
D103, 104	5635-RD5R6EB2	Zener, RD5.6EB2
	MISCELLANEOUS	
F1, 2	5732-501031	Fuse, 500mA, 125V (U.S. & Canadian models)
"	5732-50102	Fuse, T500mA, 250V (General model)
SW101/102/103/104	4431-04267360	Push Switch, Equalizer Selector, Tape Monitor
P101	4443-070185	Connector, 7-Pin
P102, 104	4443-080185	Connector, 8-Pin
P103, 105	4443-100185	Connector, 10-Pin
	4472-0131	Fuse Holder (x 4)
	2132-7048	Spacer, D2 & D3
	PCB-2 CONTROL P.C. BOARD	
	CONTROLS	
VR201, 202	5113-5037196	50kΩB, Input Level
VR203/205, 204/206	5222-3047125	300kΩC, Subsonic Frequency
VR207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226	5223-2547111	250kΩ, Equalizer Level (31.5Hz – 16kHz)
	CAPACITORS	
C201, 203	5353-510534	51pF, ±5%, 500V, Mica
	DIODES	
D201, 204, 205, 206	5637-GL5HD10	L.E.D., GL5HD10, Red, Equalizer Rec., Tape Monitor, Overload
D202	5637-GL5NG10	L.E.D., GL5NG10, Green, Equalizer On
D203	5637-GL5HY10	L.E.D., GL5HY10, Amber, Equalizer Defeat
	PCB-3 INPUT/OUTPUT JACKS P.C. BOARD	
J1/2/3/4	4484-27	4-Pin Jack, Line Input, Line Output
	PCB-4 TAPE JACKS P.C. BOARD	
J5/6/7/8	4484-27	4-Pin Jack, Tape Input, Tape Output
	PCB-5 Rch SUBSONIC SWITCH P.C. BOARD	
SW302	4431-A02717	Push Switch, Subsonic
	PCB-6 Lch SUBSONIC SWITCH P.C. BOARD	
SW301	4431-A02717	Push Switch, Subsonic
	PCB-7 POWER INDICATOR P.C. BOARD	
D301	5637-GL5HD10	L.E.D., GL5HD10, Red, Power

SCHEMATIC DIAGRAM

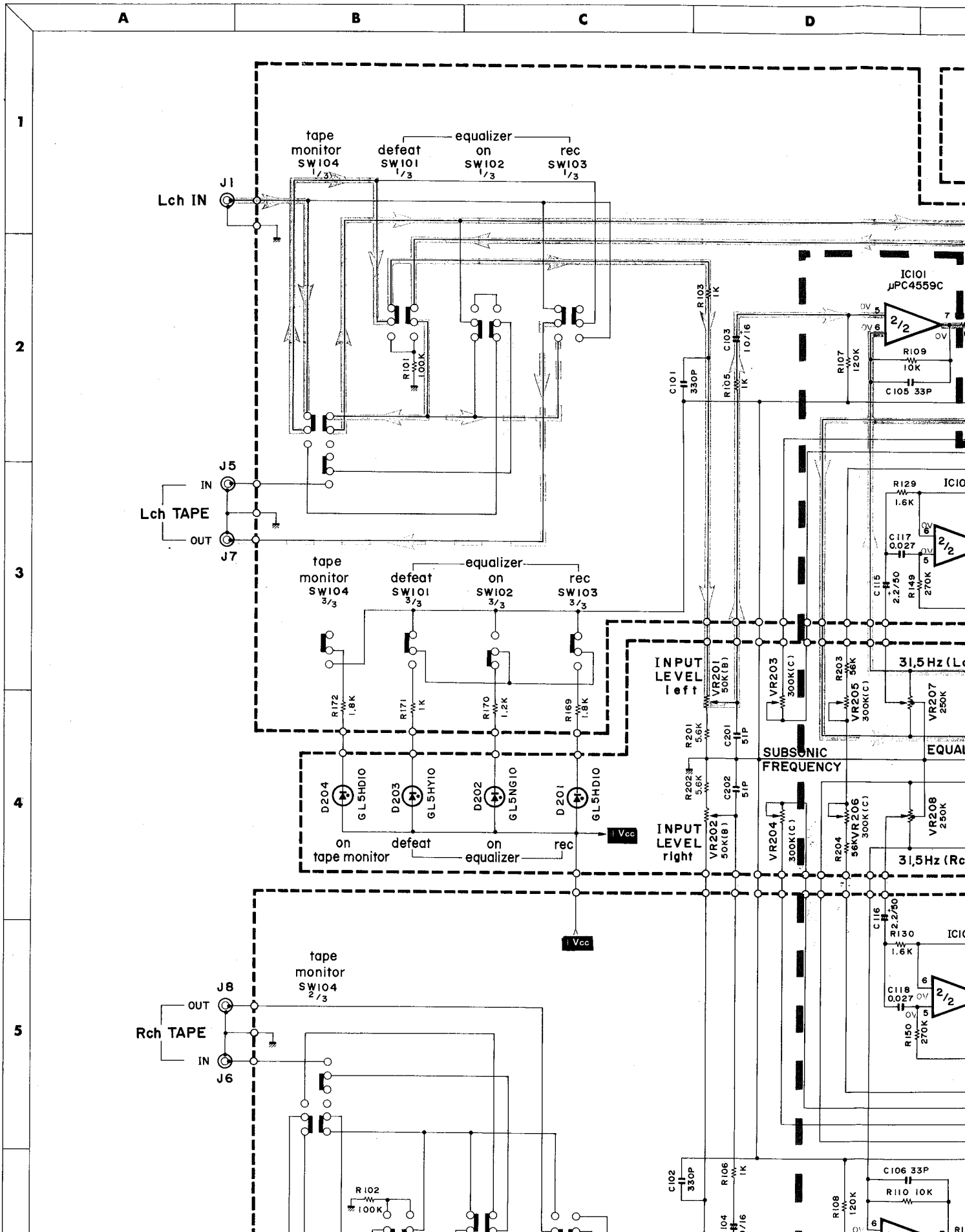


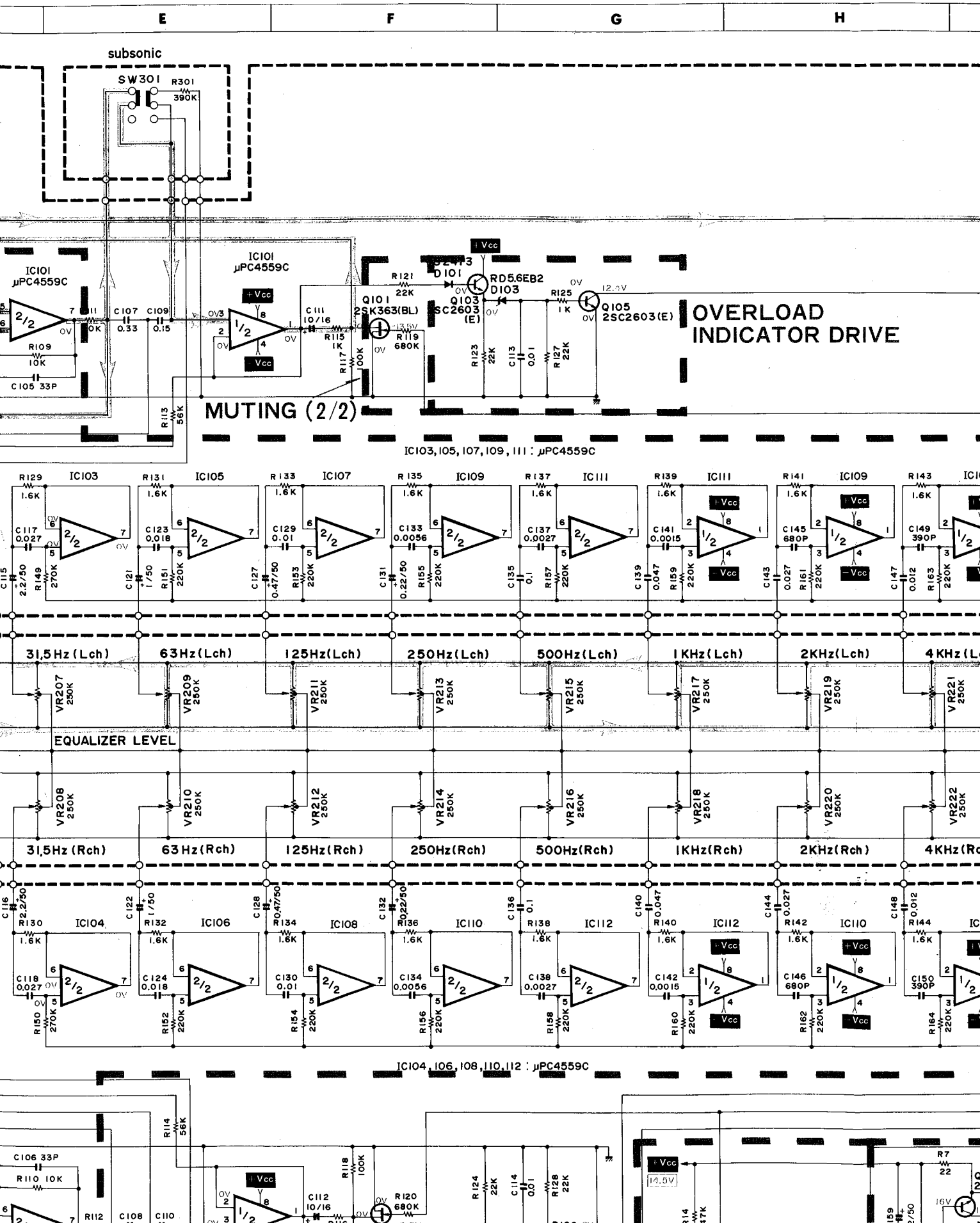
IC101 ~ 112: µPC4559C

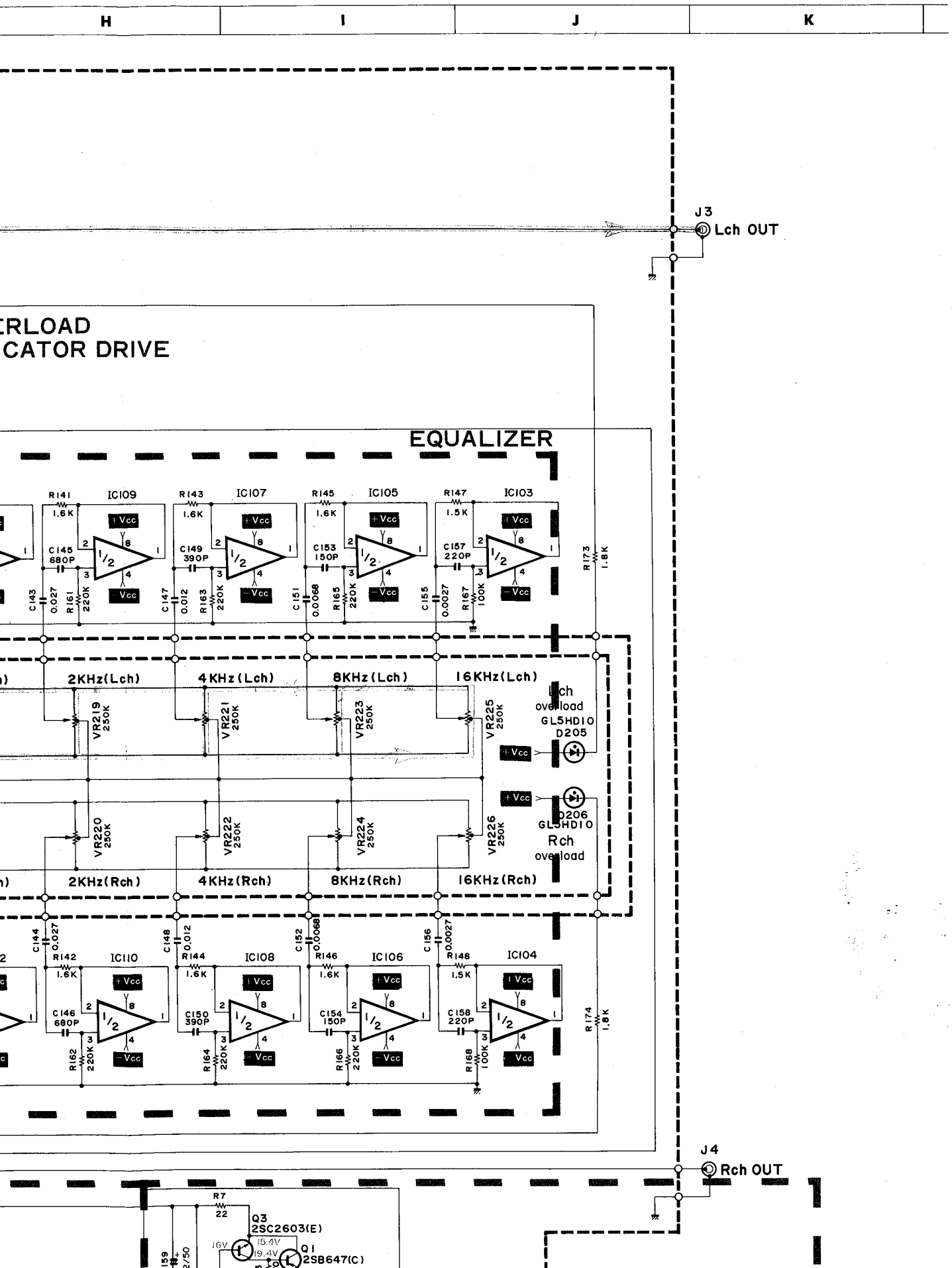
..... EQUALIZER
..... RECORDING OUTPUT SIGNAL
..... TAPE PLAYBACK SIGNAL

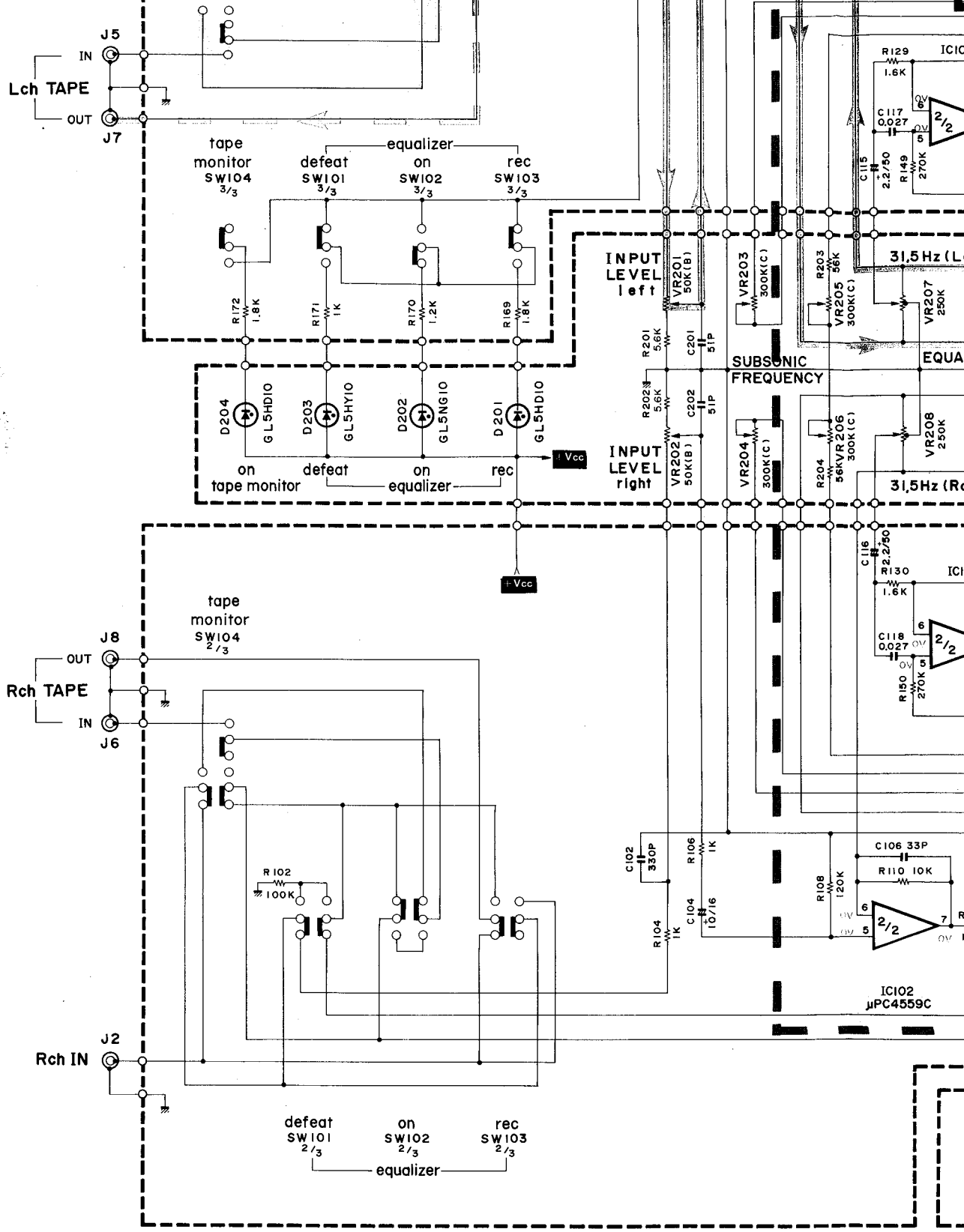
1. ALL RESISTANCES VALUES ARE IN Ω.
   KΩ=1000Ω, MΩ=1000KΩ.
2. THE WATTAGE OF RESISTORS IS 1/4W UNLESS OTHERWISE NOTED.
3. ALL CAPACITANCES VALUES ARE IN µF UNLESS OTHERWISE NOTED. P=µµF
4. V: DC VOLTAGE AT NO SIGNAL
5. ⚠ SAFETY-REQUIREMENTS COMPONENTS IN ACCORDANCE WITH PRESENT SAFETY REGULATIONS. THESE COMPONENTS MUST ONLY BE REPLACED BY ORIGINAL PARTS.

SCHEMATIC DIAGRAM




E
F
G
H
subsonic
SW301
R301
390K
IC101
μPC4559C
2/2
R109
10K
C105 33P
C107
0.33
C109
0.15
IC101
μPC4559C
1/2
C111
10/16
R115
1K
R117
100K
Q101
2SK363(BL)
R119
680K
R113
56K
MUTING (2/2)
+Vcc
D2413
D101
RD5.6EB2
D103
R121
22K
Q103
SC2603
(E)
R125
1K
Q105
2SC2603(E)
OVERLOAD
INDICATOR DRIVE
R123
22K
C113
0.01
R127
22K
IC103,105,107,109,111 : μPC4559C
R129 IC103
R131 IC105
R133 IC107
R135 IC109
R137 IC111
R139 IC111
R141 IC109
R143
1.6K
C117 0.027
C123 0.018
C129 0.01
C133 0.0056
C137 0.0027
C141 0.0015
C145 680P
C149 390P
C115 2.2/50
C121 1/50
C127 0.47/50
C131 0.22/50
C135 0.1
C139 0.047
C143 0.027
C147 0.012
R149 270K
R151 220K
R153 220K
R155 220K
R157 220K
R159 220K
R161 220K
R163 220K
31,5Hz(Lch)
63Hz(Lch)
125Hz(Lch)
250Hz(Lch)
500Hz(Lch)
1KHz(Lch)
2KHz(Lch)
4KHz(L
VR207 250K
VR209 250K
VR211 250K
VR213 250K
VR215 250K
VR217 250K
VR219 250K
VR221 250K
EQUALIZER LEVEL
VR208 250K
VR210 250K
VR212 250K
VR214 250K
VR216 250K
VR218 250K
VR220 250K
VR222 250K
31,5Hz(Rch)
63Hz(Rch)
125Hz(Rch)
250Hz(Rch)
500Hz(Rch)
1KHz(Rch)
2KHz(Rch)
4KHz(Rc
C116 2.2/50
C122 1/50
C128 0.47/50
C132 0.22/50
C136 0.1
C140 0.047
C144 0.027
C148 0.012
R130 IC104
R132 IC106
R134 IC108
R136 IC110
R138 IC112
R140 IC112
R142 IC110
R144
C118 0.027
C124 0.018
C130 0.01
C134 0.0056
C138 0.0027
C142 0.0015
C146 680P
C150 390P
R150 270K
R152 220K
R154 220K
R156 220K
R158 220K
R160 220K
R162 220K
R164 220K
IC104,106,108,110,112 : μPC4559C
R114 56K
C106 33P
R110 10K
R112
C108
C110
R118 100K
C112 10/16
R120 680K
R124 22K
C114 0.01
R126 22K
+Vcc
14.5V
R7 22
16V


H
I
J
K
J3
Lch OUT
ERLOAD
CATOR DRIVE
EQUALIZER
R141
IC109
R143
IC107
R145
IC105
R147
IC103
1.6K
1.6K
1.6K
1.5K
+Vcc
-Vcc
C145 680P
C149 390P
C153 150P
C157 220P
C143 0.027
C147 0.012
C151 0.0068
C155 0.0027
R161 220K
R163 220K
R165 220K
R167 100K
R173 1.8K
2KHz(Lch)
4KHz(Lch)
8KHz(Lch)
16KHz(Lch)
VR219 250K
VR221 250K
VR223 250K
VR225 250K
Lch overload
GL5HD10
D205
VR220 250K
VR222 250K
VR224 250K
VR226 250K
D206
GL5HD10
Rch overload
2KHz(Rch)
4KHz(Rch)
8KHz(Rch)
16KHz(Rch)
C144 0.027
C148 0.012
C152 0.0068
C156 0.0027
R142
IC110
R144
IC108
R146
IC106
R148
IC104
1.6K
1.6K
1.6K
1.5K
C146 680P
C150 390P
C154 150P
C158 220P
R162 220K
R164 220K
R166 220K
R168 100K
R174 1.8K
J4
Rch OUT
R7
22
Q3
2SC2603(E)
16V
15.4V
19.4V
Q1
2SB647(C)



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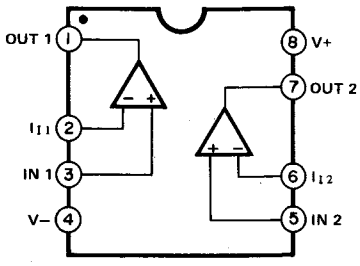
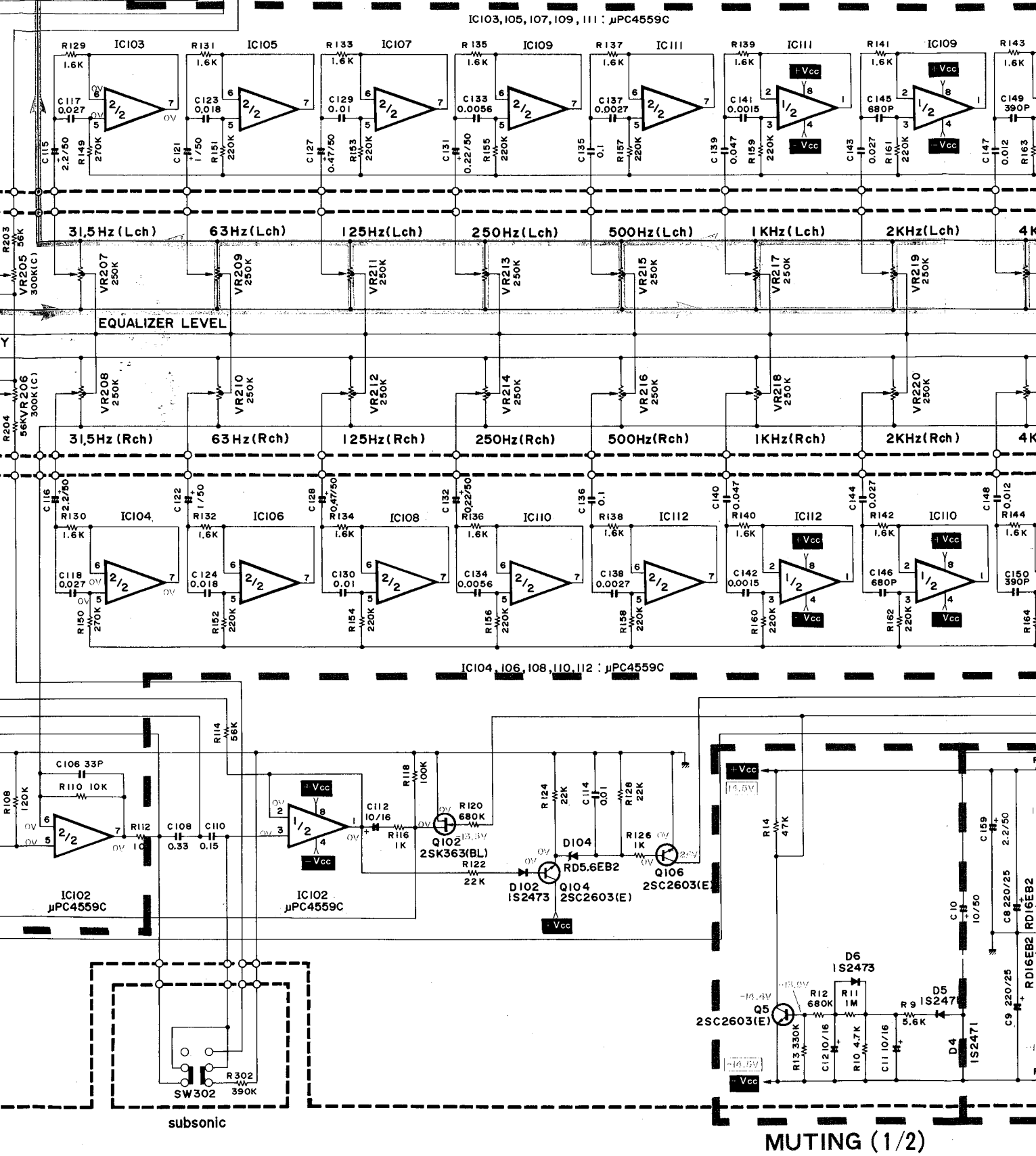
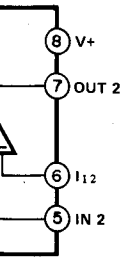
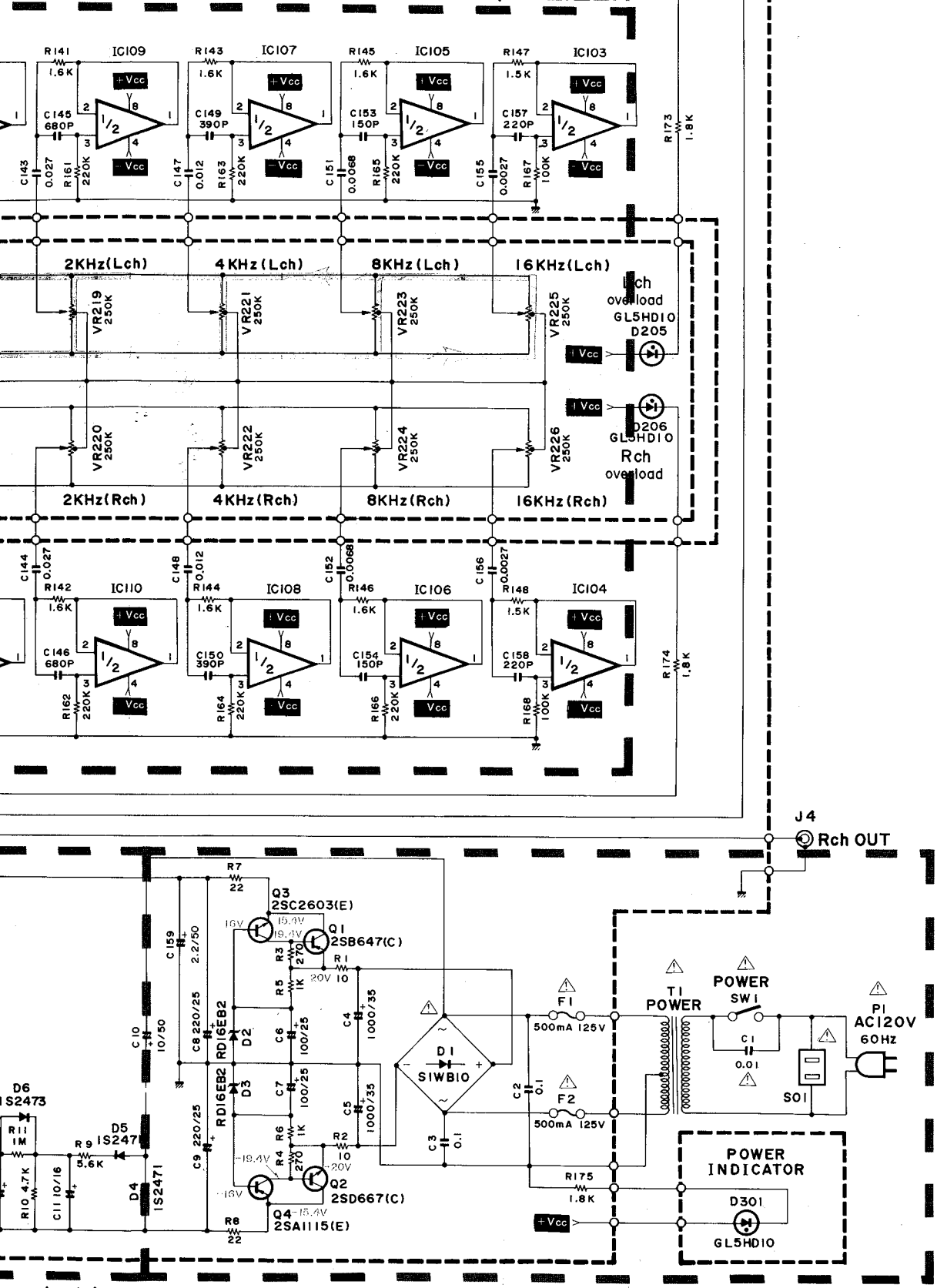
IC101 ~ 112: μPC4559C



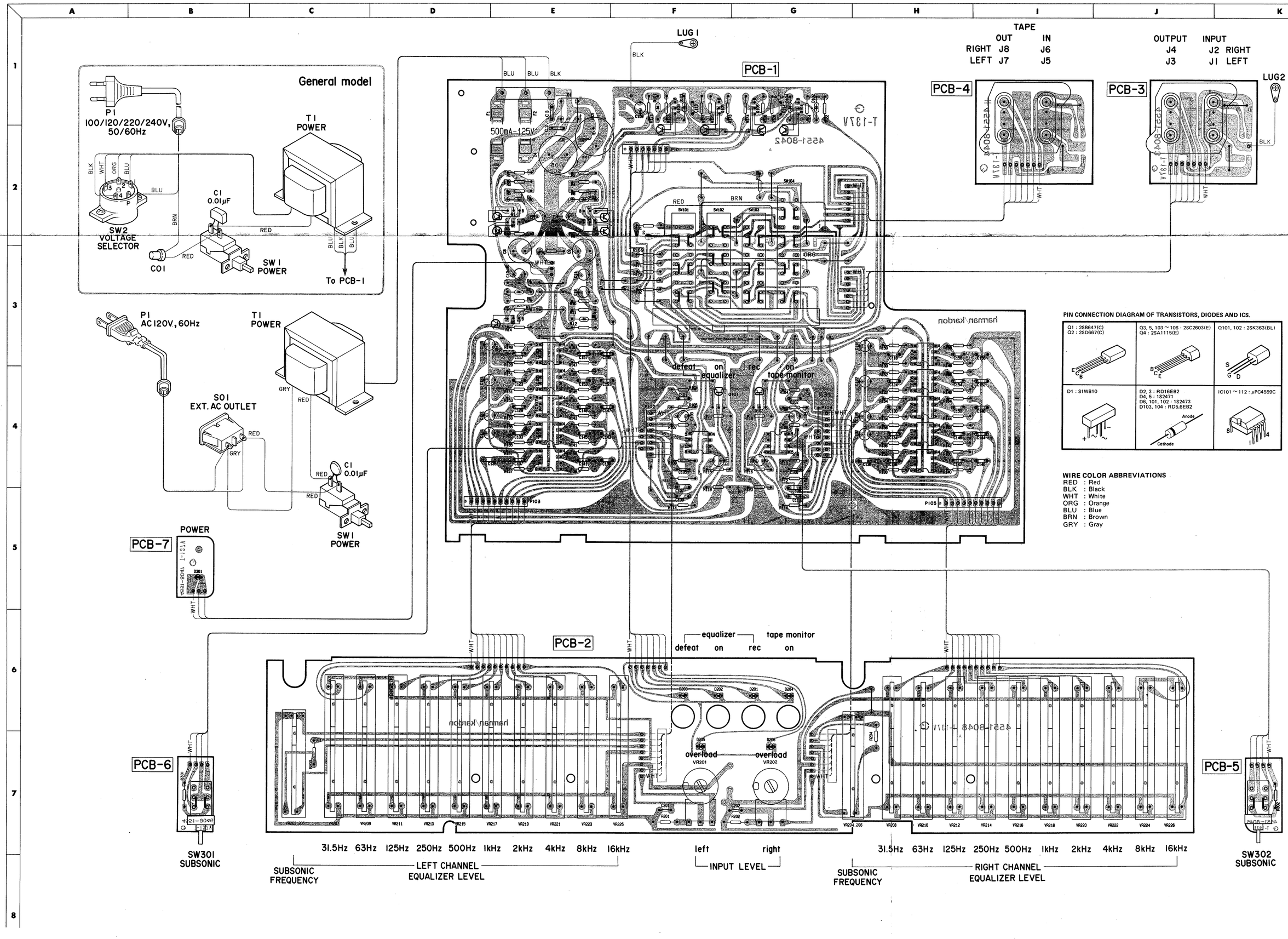

IC103,105,107,109,111 : μPC4559C
IC104,106,108,110,112 : μPC4559C
31.5Hz(Lch)
63Hz(Lch)
125Hz(Lch)
250Hz(Lch)
500Hz(Lch)
1KHz(Lch)
2KHz(Lch)
4K
31.5Hz(Rch)
63Hz(Rch)
125Hz(Rch)
250Hz(Rch)
500Hz(Rch)
1KHz(Rch)
2KHz(Rch)
4K
EQUALIZER LEVEL
IC102 μPC4559C
IC102 μPC4559C
Q102 2SK363(BL)
Q104 2SC2603(E)
Q106 2SC2603(E)
Q5 2SC2603(E)
D102 IS2473
RD5.6EB2
D6 IS2473
D5 IS247
D4 IS2471
RD16EB2
SW302
subsonic
MUTING (1/2)

PC4559C


8 V+
7 OUT 2
6 I12
5 IN 2


R141 1.6K IC109 C145 680P C143 0.027 R161 220K
R143 1.6K IC107 C149 390P C147 0.012 R163 220K
R145 1.6K IC105 C153 150P C151 0.0068 R165 220K
R147 1.5K IC103 C157 220P C155 0.0027 R167 100K
R173 1.8K
+Vcc
-Vcc
1/2
2KHz(Lch)
4KHz(Lch)
8KHz(Lch)
16KHz(Lch)
VR219 250K
VR221 250K
VR223 250K
VR225 250K
Lch overload
GL5HD10
D205
D206
GL5HD10
Rch overload
VR220 250K
VR222 250K
VR224 250K
VR226 250K
2KHz(Rch)
4KHz(Rch)
8KHz(Rch)
16KHz(Rch)
C144 0.027 R142 1.6K IC110 C146 680P R162 220K
C148 0.012 R144 1.6K IC108 C150 390P R164 220K
C152 0.0068 R146 1.6K IC106 C154 150P R166 220K
C156 0.0027 R148 1.5K IC104 C158 220P R168 100K
R174 1.8K
J4
Rch OUT
R7 22
Q3 2SC2603(E)
Q1 2SB647(C)
R3 270
R1 10
R5 1K
C159 2.2/50
C8 220/25
RD16EB2
D2
C10 10/50
C6 100/25
C4 1000/35
D1 SIWB10
F1 500mA 125V
T1 POWER
POWER SW1
C1 0.01
S01
P1 AC120V 60Hz
C2 0.1
F2 500mA 125V
C3 0.1
D6 1S2473
D5 1S2471
D4 1S2471
R11 1M
R9 5.6K
R10 4.7K
C11 10/16
C9 220/25
RD16EB2
D3
C7 100/25
C5 1000/35
R6 1K
R4 270
R2 10
Q2 2SD667(C)
Q4 2SA1115(E)
R8 22
R175 1.8K
POWER INDICATOR
D301
GL5HD10
NG (1/2)
POWER SUPPLY
General Model
F1 T500mA 250V
T1 POWER
POWER SW1
C1 0.01
P1 AC100/120/220/240V 50/60Hz
100V
120V
220V
240V
F2 T500mA 250V
SW2 VOLTAGE SELECTOR

WIRING DIAGRAM



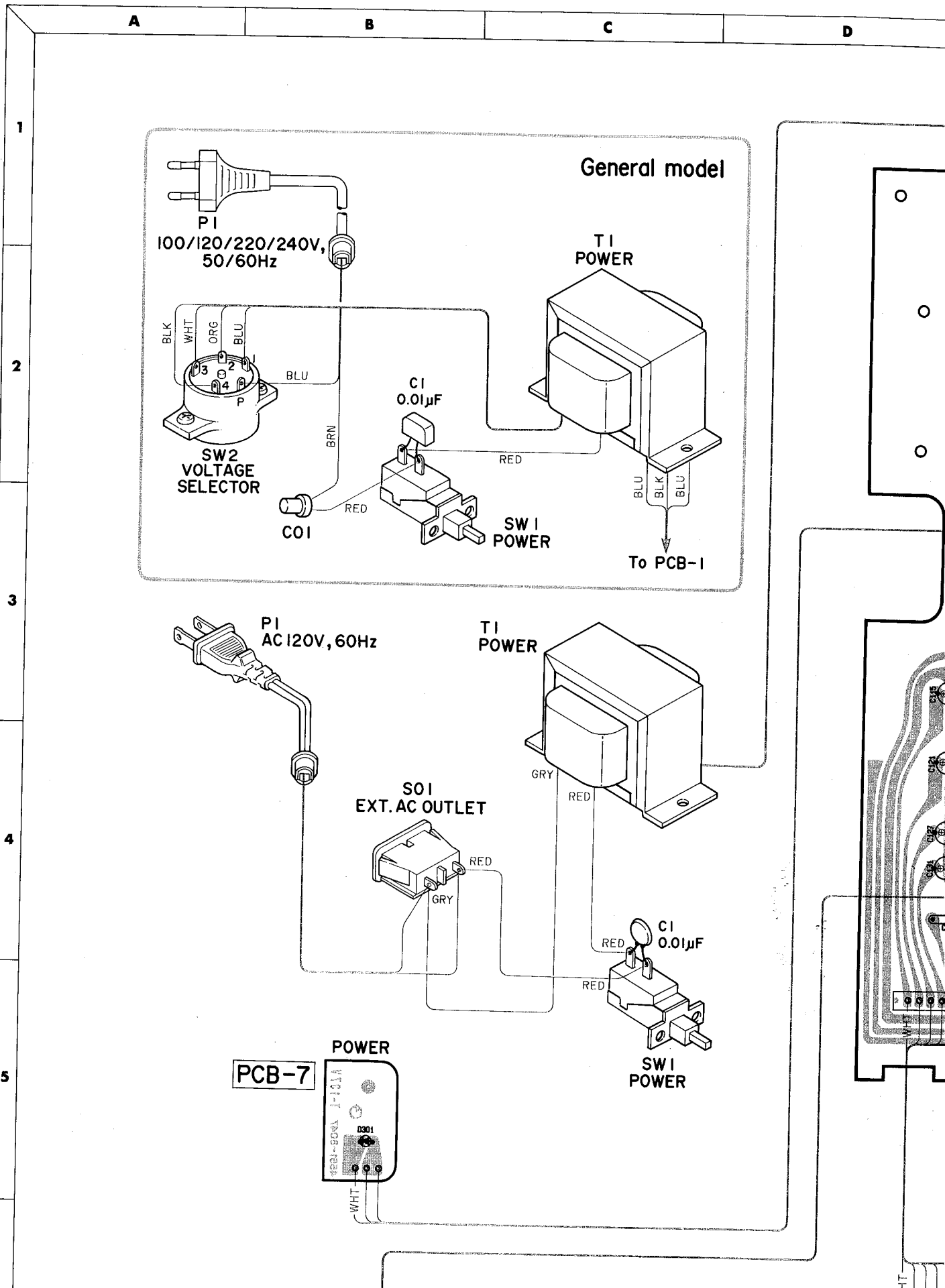
PIN CONNECTION DIAGRAM OF TRANSISTORS, DIODES AND ICS.

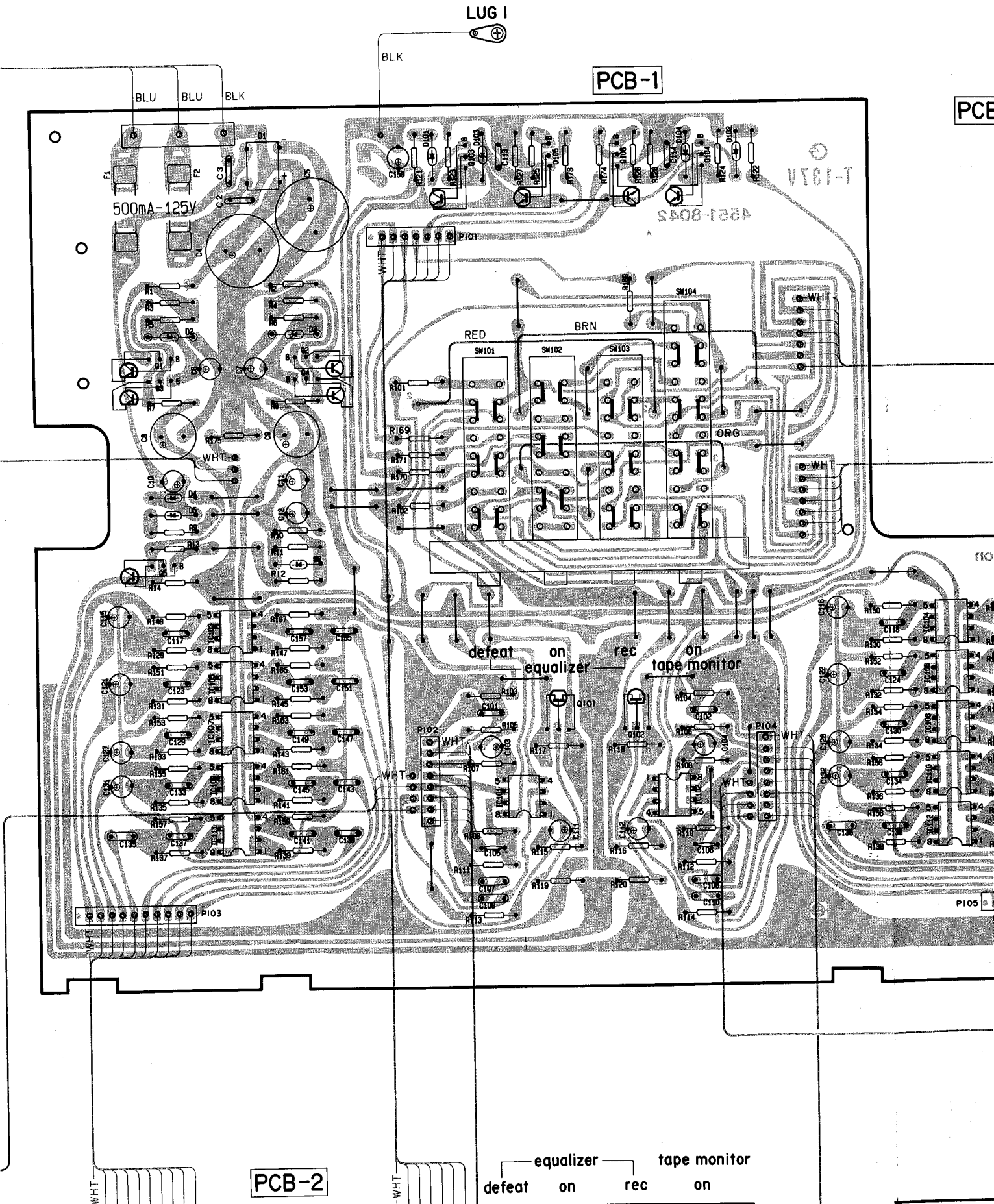
Q1 : 2SB647(C) Q2 : 2SD667(C)	Q3, 5, 103 ~ 106 : 2SC2603(E) Q4 : 2SA1115(E)	Q101, 102 : 2SK363(BL)
D1 : S1WB10	D2, 3 : RD16EB2 D4, 5 : 1S2471 D6, 101, 102 : 1S2473 D103, 104 : RD5.6EB2	IC101 ~ 112 : µPC4559C

WIRE COLOR ABBREVIATIONS

RED	: Red
BLK	: Black
WHT	: White
ORG	: Orange
BLU	: Blue
BRN	: Brown
GRY	: Gray

WIRING DIAGRAM



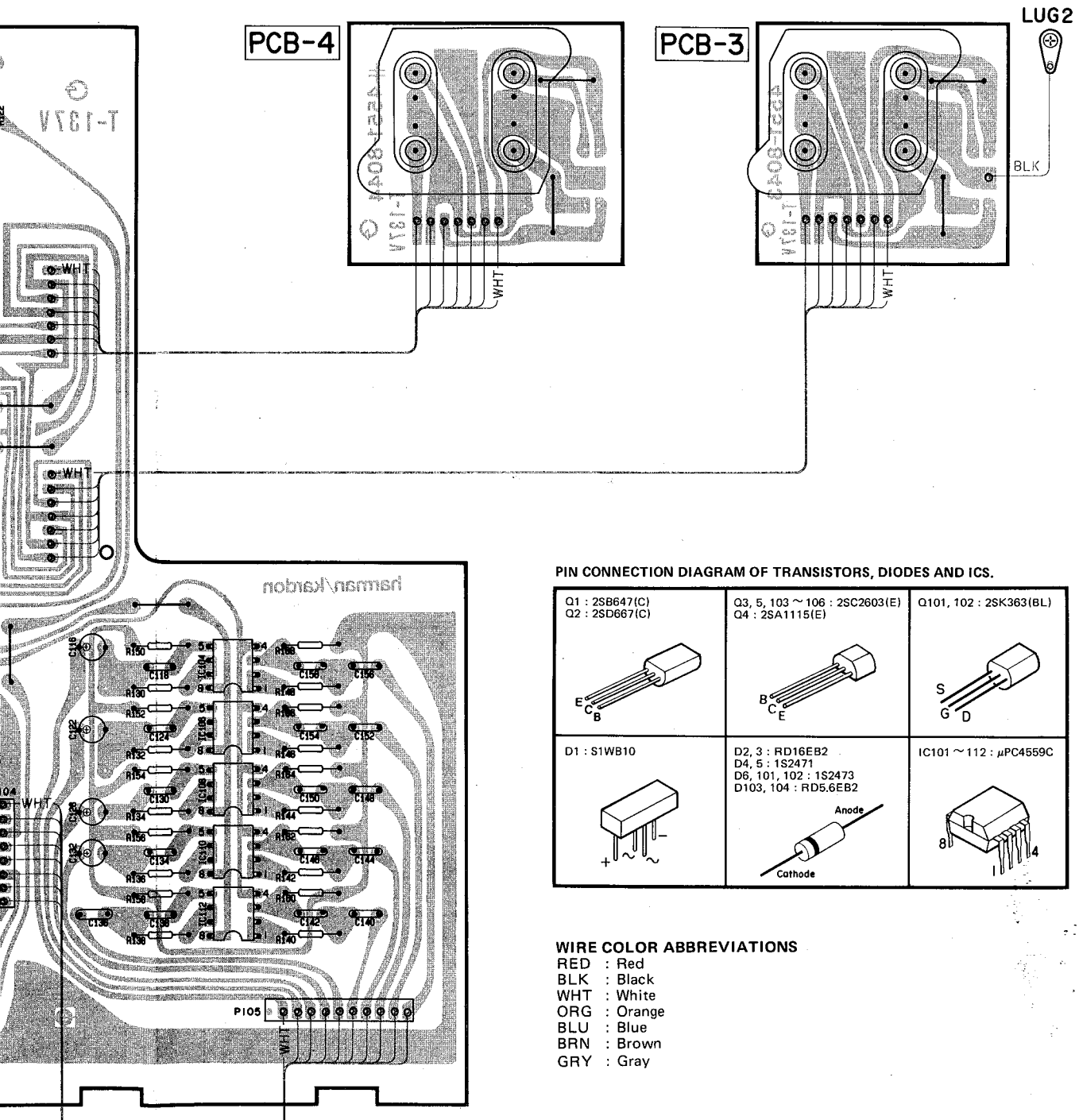

LUG I
BLK
PCB-1
BLU
BLU
BLK
500mA-125V
F1
F2
C3
C2
C4
D1
P101
WHT
SW104
WHT
RED
BRN
SW101
SW102
SW103
ORG
WHT
WHT
C10
D4
D5
D11
C12
R13
R12
R14
defeat
on
equalizer
rec
on
tape monitor
P102
WHT
WHT
WHT
P103
P104
P105
PCB-2
equalizer
tape monitor
defeat
on
rec
on

	H	I	J	K	

TAPE

	OUT	IN
RIGHT	J8	J6
LEFT	J7	J5

OUTPUT	INPUT	
J4	J2	RIGHT
J3	J1	LEFT



PIN CONNECTION DIAGRAM OF TRANSISTORS, DIODES AND ICS.

Q1 : 2SB647(C) Q2 : 2SD667(C) 	Q3, 5, 103 ~ 106 : 2SC2603(E) Q4 : 2SA1115(E) 	Q101, 102 : 2SK363(BL)
D1 : S1WB10 	D2, 3 : RD16EB2 D4, 5 : 1S2471 D6, 101, 102 : 1S2473 D103, 104 : RD5.6EB2 	IC101 ~ 112 : μPC4559C

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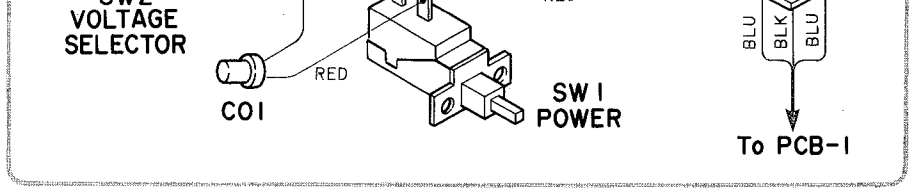
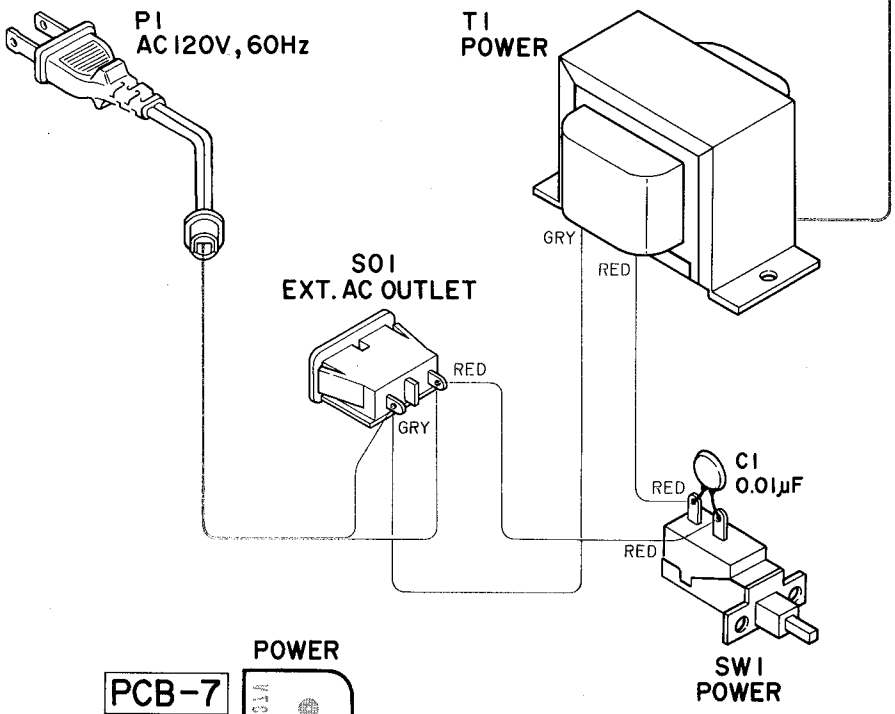
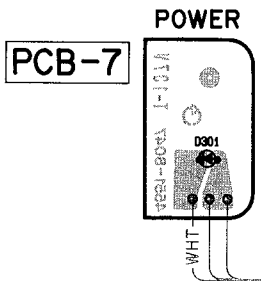
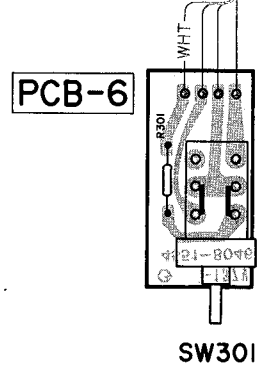
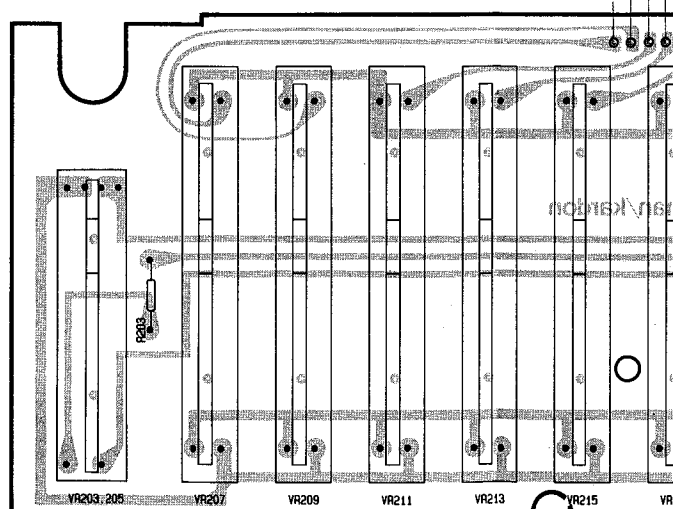
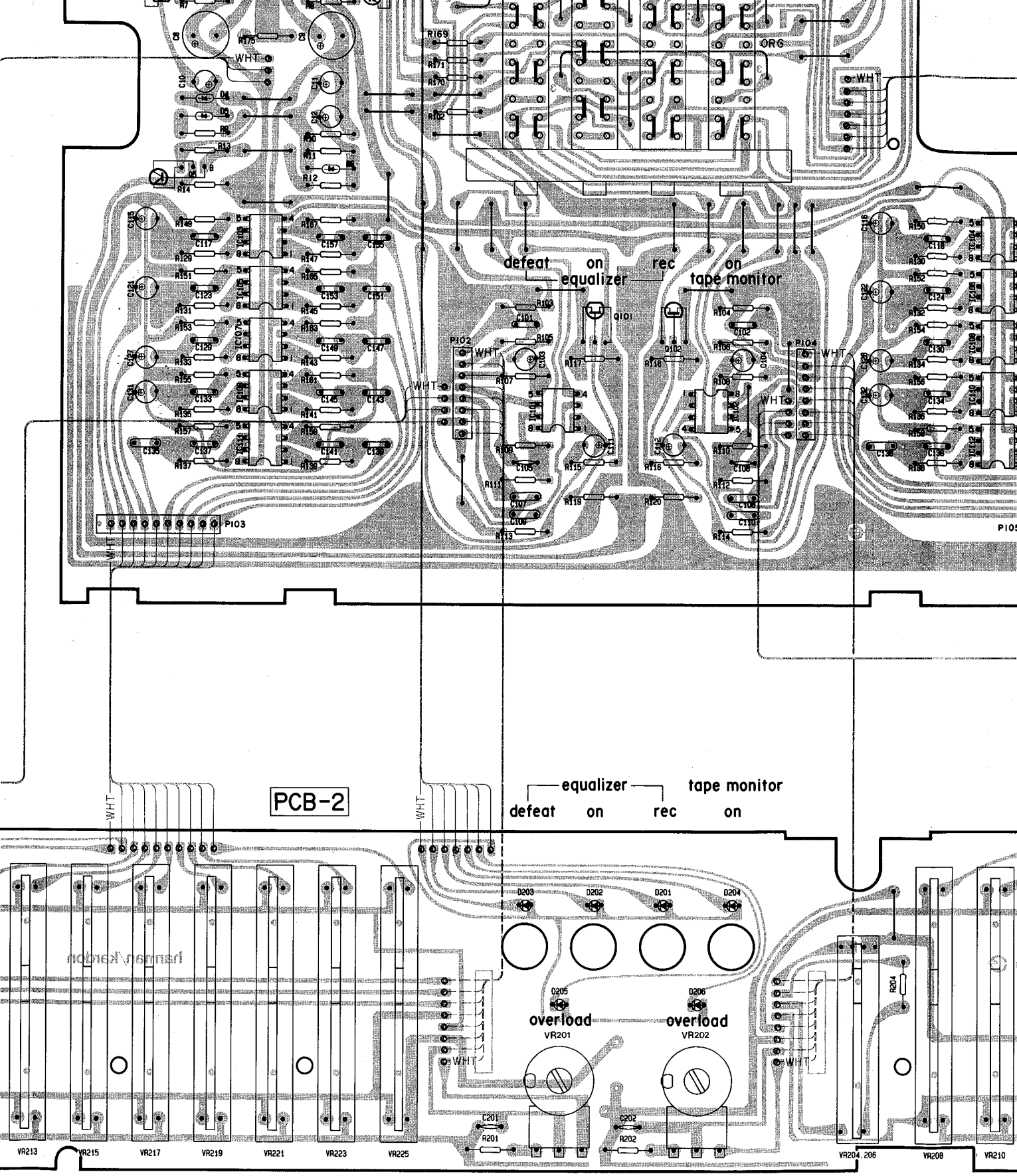

VOLTAGE
SELECTOR
RED
C01
SW1
POWER
BLU
BLK
BLU
To PCB-1

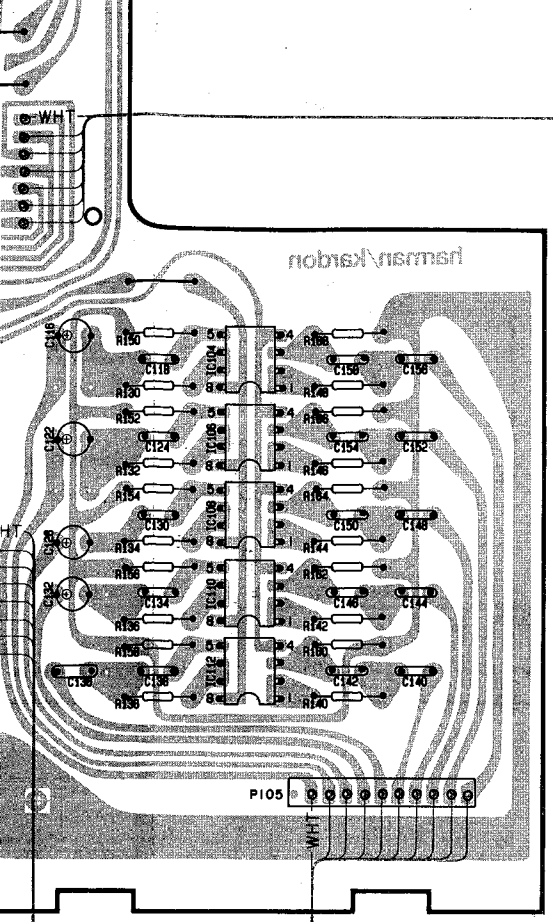

P1
AC120V, 60Hz
T1
POWER
GRY
RED
S01
EXT. AC OUTLET
RED
GRY
C1
0.01μF
RED
RED
SW1
POWER


PCB-7
POWER
D301
WHT

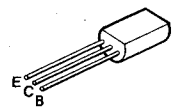
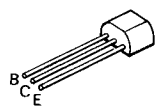
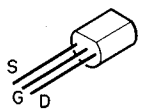
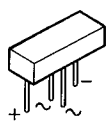
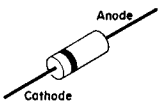
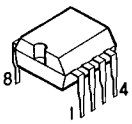

PCB-6
WHT
R301
SW301
SUBSONIC


WHT
R203
VR203,205
VR207
VR209
VR211
VR213
VR215
31.5Hz
63Hz
125Hz
250Hz
500Hz
SUBSONIC
FREQUENCY
LEFT CHANNEL
EQUALIZER LEVEL


defeat
on
equalizer
rec
on
tape monitor
WHT
ORG
P102
P103
P104
P105
Q101
Q102
PCB-2
equalizer
tape monitor
defeat
on
rec
on
D203
D202
D201
D204
D205
D206
overload
VR201
overload
VR202
VR213
VR215
VR217
VR219
VR221
VR223
VR225
VR204.206
VR208
VR210
250Hz
500Hz
1kHz
2kHz
4kHz
8kHz
16kHz
left
right
31.5Hz
63Hz
LEFT CHANNEL
QUALIZER LEVEL
INPUT LEVEL
SUBSONIC
FREQUENCY



PIN CONNECTION DIAGRAM OF TRANSISTORS, DIODES AND ICS.

Q1 : 2SB647(C) Q2 : 2SD667(C) 	Q3, 5, 103 ~ 106 : 2SC2603(E) Q4 : 2SA1115(E) 	Q101, 102 : 2SK363(BL) 
D1 : S1WB10 	D2, 3 : RD16EB2 D4, 5 : 1S2471 D6, 101, 102 : 1S2473 D103, 104 : RD5.6EB2 	IC101 ~ 112 : μPC4559C 

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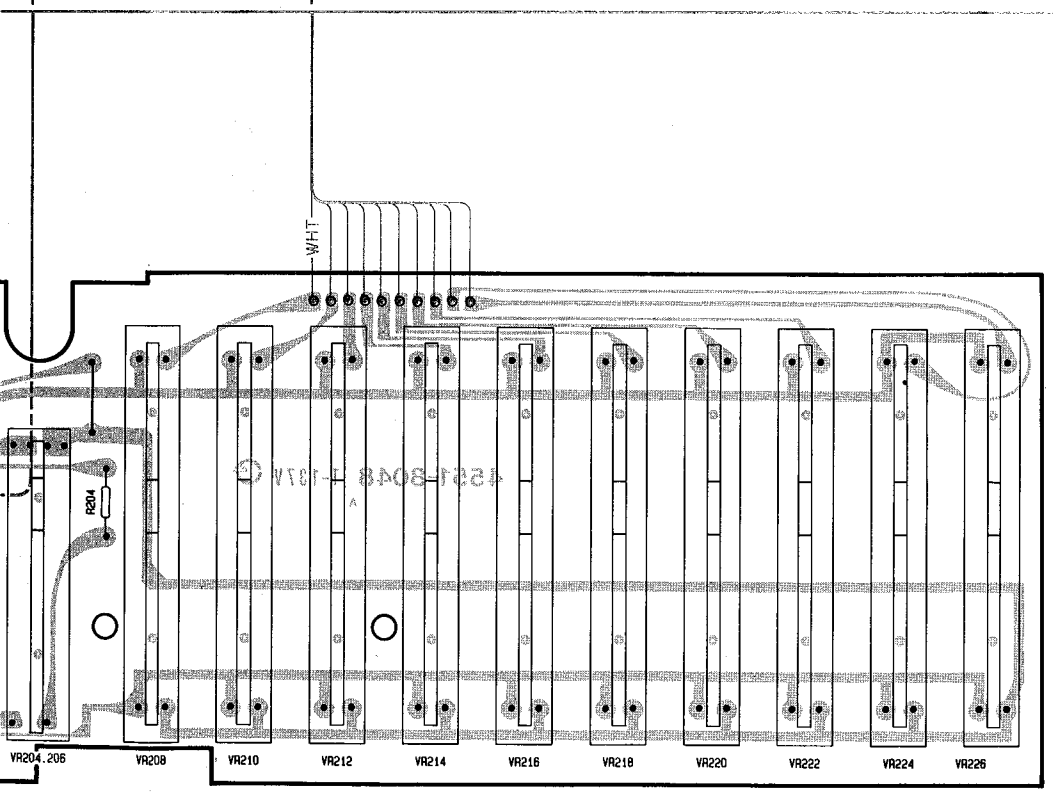

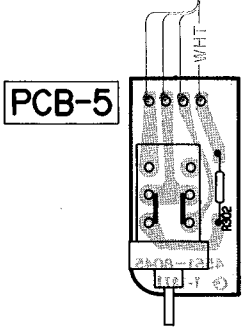

31.5Hz 63Hz 125Hz 250Hz 500Hz 1kHz 2kHz 4kHz 8kHz 16kHz

SUBSONIC FREQUENCY

RIGHT CHANNEL EQUALIZER LEVEL

SW302 SUBSONIC